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of its northern influents, and presently, after losing sight of mangrove for the first time, we arrived at the village of Takanjok. There, having obtained carriers, we marched through a dense bush cut by streamlets and a few plantations. After a six miles walk over stiff wet clay, we bivouacked for the night in a tall but thin forest. In early morning, a tornado from the north-east broke over us, a curious crash aroused me, and I found that the upper half of a tree had fallen alongside of me, grazing my hammock. When the rain subsided, we ascended the little hill Beká, where, according to the guides, Nkomo and Imbokwe, the two main forks of the Gaboon arise, and on the same evening, after thirteen miles work, of which nine were by water, we reached home at Mayyáⁿ. Our return down the river was enlivened by glimpses of far blue hill rising in lumpy and detached masses to the east. It is probably a subrange of the Sierra del Crystal, which native travellers described to me as a broken line of rocky and barren acicular mountains—tall, gravelly, waterless, and lying about three days journey beyond the wooded hills. Early on the morning of Thursday, 17th April, the *Eliza* was lying off Mr. Walker's factory, and I was received with the usual hospitality by Mr. Hogg, then in charge.

I will conclude this brief record of "first impressions amongst the Fans," with tendering my best thanks to that gentleman for his many little friendly offices, without which travelling in these regions is rather a toil than a pleasure.

P.S.—You will bear in mind that the Fans whom I visited were a comparatively civilized race, who have probably learned to conceal the customs which they have found distasteful to the civilized man. In the remoter districts they may still be determined cannibals. Before long I hope to pronounce an opinion on that point.

EXTRACTS FROM A LECTURE DELIVERED AT MUNICH, 1858, ON THE DIFFERENCE BETWEEN MAN AND BRUTES.

By Dr. Th. BISCHOFF.

IN a primitive and savage state man scarcely believes that there is much difference between him and the brute, especially if they much resemble him. Travellers relate that the Negroes in Guinea, and the natives of Java and Sumatra, look upon the orang-outang and chimpanzee as men, who do not speak that they may not be made to work.

Advancing civilization leads to another extreme. The differences now appear to man so great that he considers himself to be entirely separated from the brute creation, which he thinks are only existing for his sole use.

Natural science, however, proffers some doubts as to this exclusiveness of man. It cannot admit that every being has only been created for man's good pleasure, but that each creature has an object apart and is perfect in itself. When in the middle of the last century the anthropomorphous apes were introduced in Europe, the greatest naturalists of that time seemed greatly embarrassed to establish the physical characters which distinguish these apes from man, and it appeared to result from their investigations that man was connected with the brute creation by an imperceptible transition.

That was the time when the whole creation was considered as an uninterrupted chain of beings, and it was but natural to suppose that man formed the last link. It was also observed that the human embryo passed through various stages; that it was first an infusorium, then a mollusc, then an insect, a fish, reptile, bird, and a mammal. It was then said, that it is a mere insufferable pride of man considering himself to be anything more or higher than an animal.

This theory was not long maintained. A close investigation proved that, despite of the great resemblance of the apes to man, there prevail physical differences as great as those which enable us to distinguish genera and species. The theory of the chain of beings was also upset. True though it be that many types present a progressive development, there are gaps in nature which are unsurmountable. Again the theory of the passing of the human embryo through the stages of the lower animals was shown to be a general law of development common to all vertebrate animals, according to which they all resemble each other in the first stage of their formation, but from which they become differently formed, sometimes owing to an arrest of development, and even by retrogression.

Though it is not my intention to treat this question from a psychological, but rather from an anatomico-physiological point of view, it cannot be denied that the psychological phenomena which distinguish man are the most important, however obscure these phenomena may be.

It is impossible to deny to animals qualitatively and quantitatively many mental faculties as we find them in man. They possess consciousness. They feel, think, and judge; they possess a will which determines their actions and motions. Animals possess attachment; they are grateful, obedient, good-natured; and, again, false, treacherous, disobedient, revengeful, jealous, etc. Their actions frequently evince deliberation and memory. It is vain to derive such actions from so-called instinct which unconsciously compels them so to act.

But though we cannot deny to animals consciousness, we assert that man alone possesses self-consciousness, that is, the capacity of meditating on himself and his connection with the rest of the creation. I need not point out how from this faculty arise the most important relations of man. I would merely assert that no animal—dog, elephant, orang outang, or chimpanzee—ever exhibited a trace of such self-meditation, either in its own existence or its relation to creation, which faculty is the chief source of the action of man, and which character belongs to every human being not in a morbid or degenerate state.

Vain have been the attempts to refute this assertion by maintaining that the mode by which man and brutes arrive at knowledge is the same in both, namely, by experience,and that it is only a quantitative difference. The way by which both arrive at knowledge may be the same, but the motives which lead to this way are generically distinct, and arise, not from the quantitatively, but the qualitatively different psychical nature of man. The brute gathers experience accidentally. Man searches for experience, and applies his own and other persons' experience for a definite object, and is induced to do so by motives which do not exist for the animal.

Nor is it possible to weaken this specifically higher character of man by shewing that there are human beings who exhibit so little or nothing of this faculty, that they stand in this respect beneath many animals.

Thus microcephali, idiots, and crétins have been adduced as instances. The error is manifest that these unfortunate beings can scarcely be called men: they possess the human shape without being human beings in the strict sense. It is a rule of logic that two things should be compared with each other in their normal condition, and not one thing in a perfect and the other in a mutilated state.

Botocudos, New Zealanders, etc., have also been instanced as scarcely possessing the sagacity of many animals; and instances have been quoted of so-called wild men who, lost in early youth in forests and deserts, grew up like beasts, and exhibited no trace of self-consciousness.

With regard to the most degraded savages, intelligent travellers have always found among them a belief (however crude) in some superior being* as the cause of some natural phenomena. Moreover, the error is generally committed of viewing the actual condition of these savages, and not their capacity. Now, many individuals of so-called civilized nations would not resemble them if we were to apply to them the standard of such men as Aristotle, Newton, Shakspere, etc. It is the possibility of the development of self-consciousness which decides the human character.

Ancient physiologists have laid down the maxim that the human brain exceeds in size and weight that of any other animal. This is true in by far the greater number of cases. Whilst the human brain is rarely less than two pounds or 1000 grammes, and varies generally between two to three, and even four pounds, the weight of the brain of some of the largest quadrupeds—such as the ox, horse, camel, etc.—is rarely much above a pound, and considerably less in the bear, lion, etc.

In the elephant, however, the whale, etc., it was found that they possess a brain absolutely heavier than the human brain. That of the elephant has been rated at from eight to ten pound, of the whale four to five pounds.

It was then laid down as a law that the brain of man exceeded that of any other creature, when considered in proportion to the rest of the body.

This axiom again holds good in most cases; for while the human brain in proportion to the body is on the average as 1 : 35 to 37, it was found in the whale as 1 : 3,300; in the elephant, 1 : 500; in the ox, 1 : 1000 to 800; in the horse, 1 : 700 to 400; bear, 1:265; dog, 1: 250.

Further investigations have, however, invalidated the general maxim, as in some of the smaller animals, both in birds and mammals, the weight of the brain in proportion to the rest of the body exceeds that of the human brain.

In the canary bird and greenfinch it is about 1 : 14. In some small apes, also, the brain is, relatively to the body, heavier than in man. Thus, in the sajou, 1 : 13; saimiri, 1 : 24, &c.

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* [As regards this often quoted assertion that all savages, without exception, have some kind of belief in a God and a future life, Dr. Lang, *Aborig. of Australia*, says, "They have no idea of a superior divinity, no objects of worship, no idols nor temples, no sacrifices, nothing whatever in the shape of religion to distinguish them from the beasts." This statement has been confirmed by Sir Charles Nicholson, V.P.A.S.L. Dr. Mouat has made similar observations respecting the Andaman islanders.—Ed.]

Again, the relative weight of the brain in different animals, compared with their psychical qualities, is against the above axiom, in as much as, for instance, the relative weight of the brain of the ass is double that of the horse, psychically so superior to the donkey.

Comparative anatomy has, however, proved that no animal possesses such a development of the hemisphere and the grey matter as man.

Comparative anatomy has also shown that no animal brain exhibits so numerous, deep, and *asymmetric* convolutions in both hemispheres as that of man.

In some cetacea the convolutions are more numerous, but the sulci are scarcely a few lines in depth, whilst in the human brain they descend in many places above an inch. In some carnivora the sulci are deep, but much less numerous, and always strictly symmetrical on both hemispheres. This applies also to the apes and ruminants, in which the sulci are both less numerous and deep than in man.

There can be no doubt that the arrangement is for the purpose of increasing the surface of the brain. If in the given space of the cranial cavity the brain is to have a larger surface than can be afforded by the inner part only of the skull, the brain mass must necessarily be arranged in folds. These convolutions, and the grey mass of which they are composed, and which in psychological respect is the active portion of the nervous mass, are more developed in man than in any other creature. It would then follow that the psychical status of man corresponds with the greater development of the hemispheres, and especially on the extent of their surface, caused by the number and depth of the convolutions.

The Senses.—There is another character which distinguishes man from the brute, besides the higher cerebral development—the connection of man with the external world by the variety and intensity of his organs of sense.

Though individual animals excel man in the acuteness of some sense, there is none in which all the senses are capable of an equal development. This holds especially good is respect of the organ of touch, in which he by far excels all other creatures. Considering, now, that the development of all our faculties is only effected by sensible impressions, and all our knowledge derived by the medium of our senses, the advantage which man possesses in this respect above animals is sufficiently manifest.

Language. The possession of the power of expressing his thoughts by articulate sounds has ever been considered as the distinctive character of man, it being met with among all human beings, and absent in all animals. The reason why animals do not speak has generally been attributed to a different organization of the larynx and other appendages. Thus Camper considered the presence of two pouches near the larynx of the orang-outang as an impediment of speech. But all anatomical disquisitions on this subject have failed to explain the absence of articulate language in some animals on merely anatomical grounds. Moreover it is well known that some animals are capable of uttering articulate sounds. Leibnitz speaks of a dog in Meissen which could articulate ninety words.

It is quite clear that language in man must have been the consequence of the necessity of intercommunication with his fellow men, and must have sprung from the psychical nature of man. The necessity of intercommunication between animals being limited to physical desires, such as food, protection, and sexual intercourse, are sufficiently expressed by inarticulate sounds.

The dispute about the origin of language, whether it was a gift of nature or the invention of man, may be decided in this way, that man owes his capacity of speaking to nature, but its application to his own invention. Hence the same notion and the same object is designated in different languages by different words, unless congruent circumstances led to the application of similar sounds.

Upright Stature.—The erect stature of man is the distinctive character mostly dwelt upon by physiologists.

It is true that some plantigrades, as bears, etc., and some apes, can assume for a limited time an erect posture, but this is only exceptionally done; but man in the most degraded state always walks upright, which is the necessary consequence of the structure of his skeleton and the muscles connected with it. . . .

The large and heavy head of man, about one-fourteenth of his whole weight, is so articulated upon the vertebral column that it is balanced upon it. . . .

The legs are so constructed that they perfectly support the body when erect, whilst in a horizontal position they would be very cumbrous. The hand is so clearly an organ of prehension and touch, that it seems unfit to serve as a mere support.

The proportions of the various parts of the human body exhibit a variety and a capacity of development not to be found in any animal. Man alone can stand, walk, run, spring, climb, swim, ride, drive, sit, or lie on his back for a long time. In some of these motions man is excelled by animals, which however are mostly limited to some particular kinds of locomotion. Our jugglers, rope dancers, contortionists, etc., prove of what a variety of motions man is capable.

Man possesses, in addition, organs of assimilation such as no animal enjoys, owing to the structure of his teeth, the alimentary canal, etc. Indeed, there is no animal in which all the three species of teeth are found in such an uninterrupted proportion as in man. The possibility of the distribution of mankind on all parts of the globe is owing to the pliability of man's organization. But few animals can support, like man, the differences in climate, etc. It is also remarkable that the creatures approaching nearest to man, namely, the orangs and chimpanzes, are so far behind man in this respect, that they soon perish when removed from their native spot.

NOTES ON THE ANTIQUITY OF MAN.

When did man make his first appearance on our globe?

Was man a witness of the last change in the surface of the earth, and of the inundations by which the gravel called diluvium has been deposited? And, if so, must he not have been the contemporary of many of the extinct gigantic animals?

No one doubts that the physical condition of the globe we inhabit, and the history of mankind, are legitimate subjects of human inquiry; and yet frequently where these questions have been raised there has been a great repugnance to discuss them on their own merits, from a vague fear that the facts elicited would clash against popular opinion.

The evidence in favour of a much greater antiquity of the human race than was hitherto allowed has been gradually accumulating. The facts which are everywhere brought to light, though perhaps not as yet universally acknowledged, are sufficiently pregnant, and the deductions from them too important to be any longer ignored; they must be thoroughly sifted, and either affirmed, or, if possible, refuted.

The present paper is a summary of the leading facts and opinions under discussion.

There is a circumstance connected with our subject which appears rather curious. While individuals or families are most anxious to trace their pedigree as far back as possible, and take pride in the antiquity of their descent, and while nations are equally tenacious of their remote antiquity, humanity, in the aggregate, prefers, in relation